IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No.: MAUSE

In re Application of:	)
ELMAR MAUSE et al.	) Examiner: Patel, Vishal A
Serial No.: 10/677,637	) Group Art Unit: 3676
Filed: October 2, 2003	)
For: LIP-TYPE SHAFT SEAL	)

DECLARATION UNDER 37 C.F.R. §1.132 BY MR. ELMAR MAUSE .

I, Elmar Mause, residing at Eigersdorfer Weg 3, 91448 Emskirchen, Germany, herewith declare that I developed the lip-type shaft seal for rolling-contact bearings of water circulating pumps, which is protected in the U.S. patent application: 10/677,637, and of which I am a co-inventor.

I am a qualified graduated engineer under the employ of INA-Schaeffler KG and in charge as head of the department Applications Engineering for the sector of rolling-contact bearings for water-pumps within the INA-Schaeffler Group. I have been employed by INA-Schaeffler KG as a graduated engineer in this department since September 1, 1996. Prior to that, beginning with February 1, 1981, I was employed by the company SKF GmbH of Schweinfurt/Germany and also in charge for the product area of water pump bearings. As a result of a joint venture of July 1, 1996 between the firms of INA-Schaeffler KG and SKF GmbH, manufacture of the product water pump bearings has been united in Momo, Italy. Following the termination of the joint venture in January 1999, the development, manufacture and distribution have continued solely by the INA-Schaeffler KG.

Background of the development of the new seal concept for Water pump bearings in accordance with the US-Patent application: 10/677,637

When INA-Schaeffler KG attempted distribution of rolling-contact bearings for water pumps in Japan, it became clear that Japanese customers would only use rolling-contact bearings from INA-Schaeffler KG, when the seals show improved "water retention capability". This presented the need to develop rolling-contact bearings for water pumps with seals which in relation to water retention capability attain at least the values and function of known standard solutions, i.e. three-lip seals of Japanese competitors.

The characteristic of three-lip seals involves the provision of two radial sealing lips and an axially acting sealing lip, whereby the radial sealing lips run in unison against or upon a component which co-rotates with the water pump shaft, and the axial sealing lip runs against this component.

In addition, the following conditions or outer parameters should be met:

- the sealing function must be ensured for a shaft diameter of a water pump up to 16 mm and a rotation speed of 12,000 revolutions/minute;
- the sealing quality of three lips seals must be reached, if possible exceeded;
- reduced friction combined with a minimum of wear.

The new seal concept, the INA-Schaeffler KG solution includes:

- an axial and a radial sealing lip;

- particular angular disposition of the sealing lips when not under stress and not installed;
- defined lengths of the sealing lips as well as overlap of the sealing lips in relation to the contact surfaces;
- a Shore hardness for the sealing material.

Further advantageous configurations of the invention relate to:

- an anterior lip which is connected in one piece with the axial sealing lip and extends up to a gap size to the contact surface;
- a garter spring associated to the radial sealing lip.

As a consequence of the novel seal concept that includes previously listed features, an optimal sealing effect could be attained, while at the same time friction and wear are reduced. The novel seal concept has the further surprising effect that it advantageously reduces sensitivity to positional tolerances, i.e. manufacturing and bearing tolerances of the components on which the sealing lips are supported.

The novel seal concept "water proof seals" developed by INA-Schaeffler KG not only is able to attain the sealing effect of three-lip seals known to date but significantly improved results have been attained during "water-drop-tests' that are demanded by the Japanese customers.

The novel INA-Schaeffler KG seal concept according to U.S. patent application 10/677,637 resulted in a clearance for mass production to Japanese customers. In the meantime, respectively equipped water pump bearings have been directly shipped to customers in Japan. Further launches of mass production in Japan are imminent.

As a result of the INA-Schaeffler KG success in Japan, the economic success in Europe followed as well so that INA-Schaeffler KG has shipped in the European market to customers in the year 2004 almost 4 million rolling-contact bearings for water pumps (with still rising tendency) which have incorporated as seal the "water proof seals". The rapid economic success for INA-Schaeffler KG is based i.a. on the ability to exchange the rolling-contact bearings with the novel seal concept without any need for modification or new construction compared to conventional rolling-contact bearings.

It is my contention that my statements about the novel INA-Schaeffler KG seal concept for water pump bearings show the importance of this solution in the highly competitive world market.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon

Herzogenaurach
Date 04.03.2005

Elmar Mause